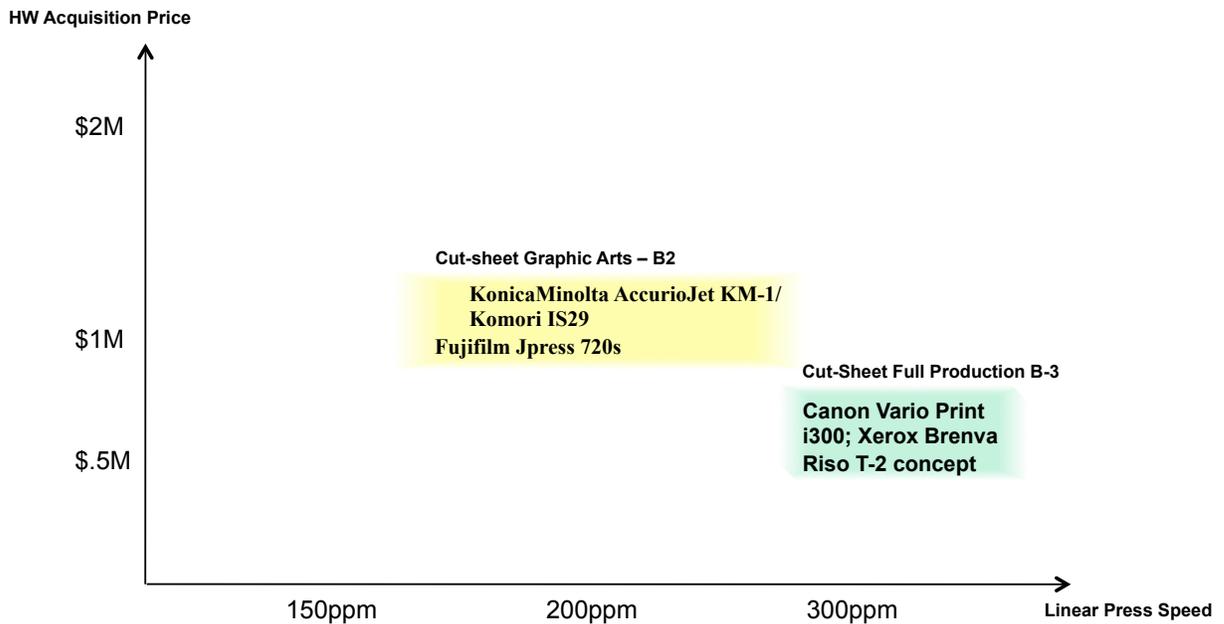


## The Production Cut-Sheet Inkjet Market

Production cut-sheet inkjet printers are single-pass inkjet printing systems feeding sheet rather than roll paper. The target market for these printers are printing operations with established sheet workflow, whether in commercial or in-plant print shops. Currently there are two main classes of cut-sheet production inkjet printers: B-2 size (20”x29” sheet) and B-3 size (13”x20”) printers. The B-2 size printer typically print 4-up 8.5”x11” size pages per sheet, and the B-3 size printers typically print 2-up 8.5”x11” pages per sheet.

Figure 1 Segmentation of Production Cut-Sheet Ink Jet printers by Select Models



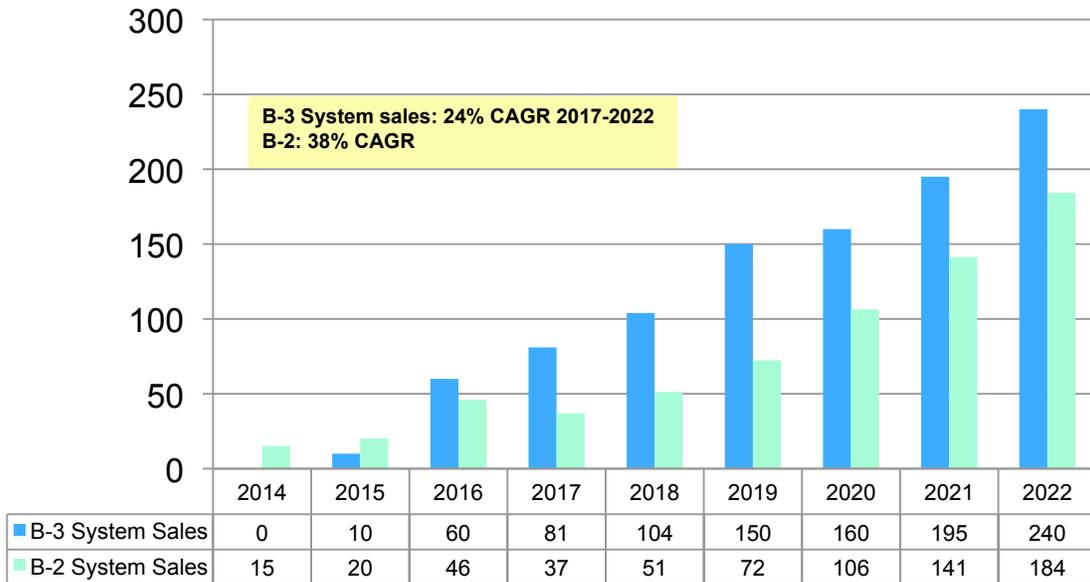
Source: IT Strategies, Inc.

They are further differentiated by the ability to print well on either standard bond or inkjet treated sheets (B-3 printers), or directly onto coated and uncoated offset stocks, included glossy offset papers (B-2 printers). In the future B-1 size printers (40”x58” sheet) are expected to enter the market, aimed at graphics arts applications like the currently available B-2 printers. For the purposes of this report, we have excluded console-type cut-sheet light production printers like the Riso Comcolor single-pass inkjet printers, which tend to be found more typically in office environments.

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While many were announced as products years earlier, the first commercial shipments of the B-2 commenced in 2014 and the B-3 printers in 2015. We are still in the early days of market development of both the B-2 and B-3 production printers, in part because of the development of suitable sales channels. Until their introduction, there were no products on the market like it.

**Figure 2 Cut-Sheet Production Inkjet System Sales, WW**



Source: IT Strategies, Inc.

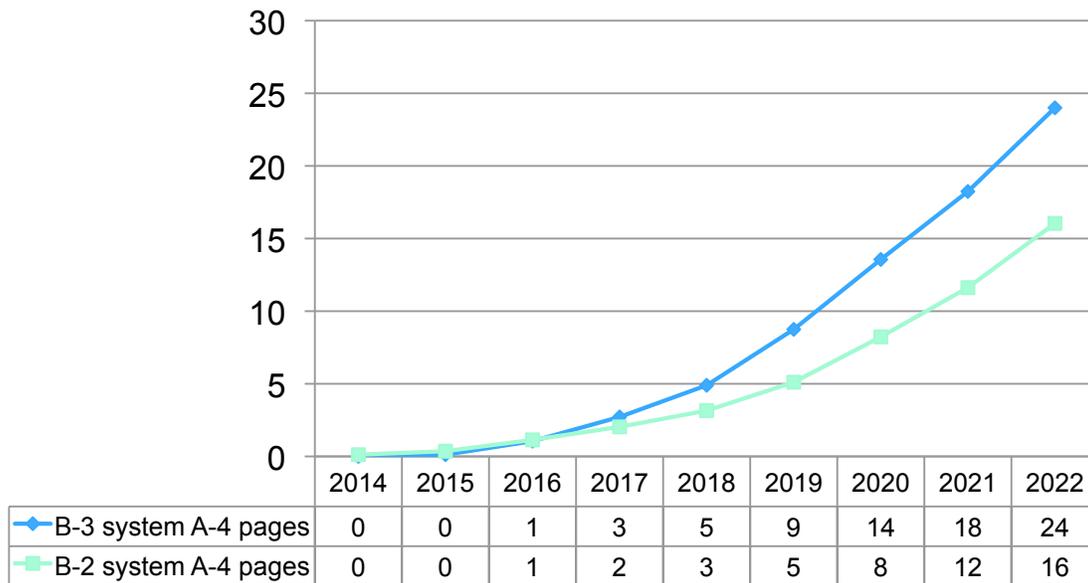
Sales of both B-3 and B-2 size cut-sheet printers are growing in excess of 25% annually, with a dip in 2017 for B-2 printers related to some internal manufacturer changes in sales resources. The B-2 inkjet printers have proven to be reliable and are meeting user needs for productivity and reliability. They are not however at the same level of maturation in terms of workflow as their chief Indigo 1x000-series competitors, which can leverage a 20+ year history of digital printing workflow. Vendors of B-2 inkjet printers also do not have as many sales resources available as HP/Indigo, which matters greatly when it comes to developing new markets and territories.

The B-3 inkjet printers are focused mainly upon replacement of toner cut-sheet presses rather than offset presses. Design primarily to print on uncoated papers, they fit well with transaction, book, and direct mail applications that require a cut-sheet rather than continuous feed workflow. Ink development and advances are moving forward at a fast pace, but at the existing sheet sizes are unlikely to be a natural alternative for small format offset. The equivalent letter-size simplex page volumes produced on B-2 and B-3 printers are fairly similar currently.

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IT Strategies accounts B-2 size to be the equivalent of 4-letter-size sheets, or twice the sheets of the B-3 presses which we account for as 2-letter size pages. The combined production inkjet print volume pales in comparison to the 20+ billion pages produced on digital color presses like Indigo, iGen, and Nexpress today, but the growing installed base (with few if any retirements unlike the digital color press market) is expected to drive production inkjet print volumes beyond digital color toner presses by 2021.

**Figure 3 Cut sheet Production Inkjet Page Volume WW, billions of simplex letter-size pages 2014-2022**



Source: IT Strategies, Inc.

**B-3 Cut Sheet Printers**

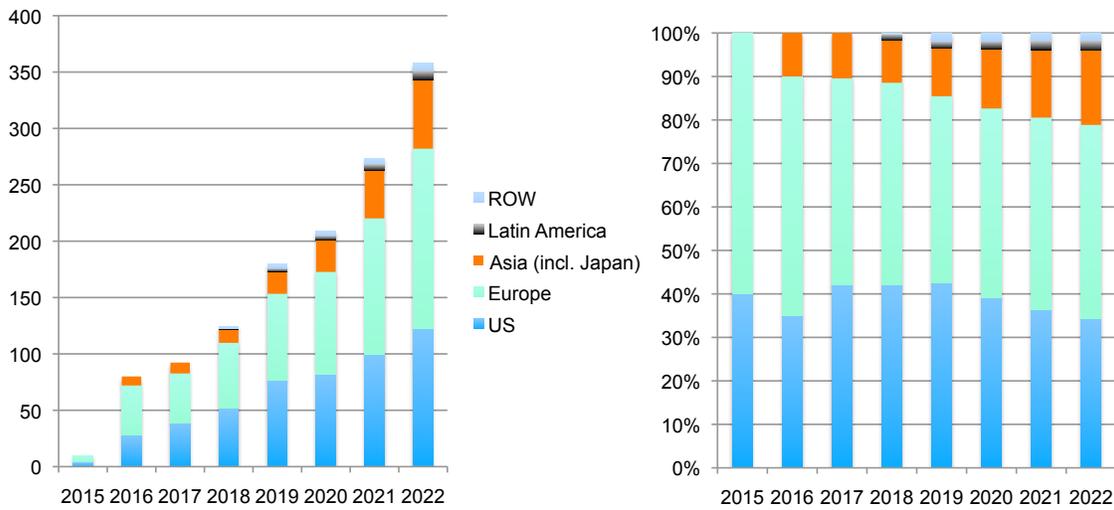
The first B-3 size cut-sheet inkjet printer was introduced by Canon/Océ as a concept in 2013, with the first VarioPrint i300 units shipping in 2015. About half the acquisition cost of a typical continuous feed inkjet production printer, it has found a home mainly as a replacement for monochrome cut-sheet toner printers. The VarioPrint i300’s productivity can replace up to 4 or more monochrome cut-sheet toner printers. It is also replacing some digital color presses, among accounts that are more concerned about cost of operation than matching color toner’s output. Xerox started shipping a competing product called the Brenva in 2016. Like the i300, it too is based upon an existing toner transport design.

Unit growth of B-3 production inkjet printers has been below our expectations for these devices during 2017, even though the operational performance of these devices has been very strong. Print providers appear to be holding on to their toner printer longer than one would expect.

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It is often an easier sell to replace an aging toner unit with a similar, perhaps lower acquisition cost toner unit. However, there is gaining recognition among print providers that if they have sufficient volume, the economics of consolidating print volumes onto a single more productive print system makes strong financial sense. IT Strategies expects industry consolidation to drive the need for greater efficiencies, causing strong growth for B-3 inkjet printers. One potential inhibitor might be the printer equipment vendors themselves: toner and toner maintenance charges tend to be higher and more presumably more profitable than similar inkjet charges. Hence a gradual transition from toner to inkjet may be in vendor’s short-term interest.

**Figure 4 Cut sheet Production B-3 Ink Jet Engines by Region WW 2015-2022**



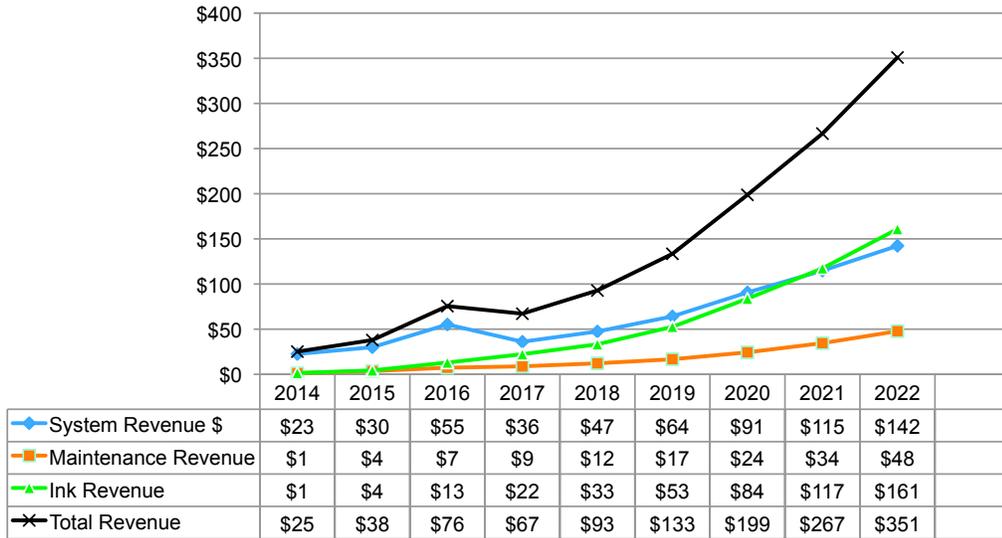
Source: IT Strategies, Inc.

Regionally Europe is expected to lead in sales of B-3 printers as there are more print provider sites than in N. America or other regions that can afford the investment required for B-3 systems. Sales in Asia commended in 2016; Canon in particular has strong opportunity for distribution of the i300.

Collectively, with the current offerings in place, vendor revenues could top \$100 million by the end of 2018. IT Strategies expects ink and maintenance revenue to surpass hardware revenue starting in 2019, growing total B-3 revenues north of \$350 million by 2022.

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Figure 5 B-3 Cut sheet production inkjet Sales and Revenue, \$M 2014-2022

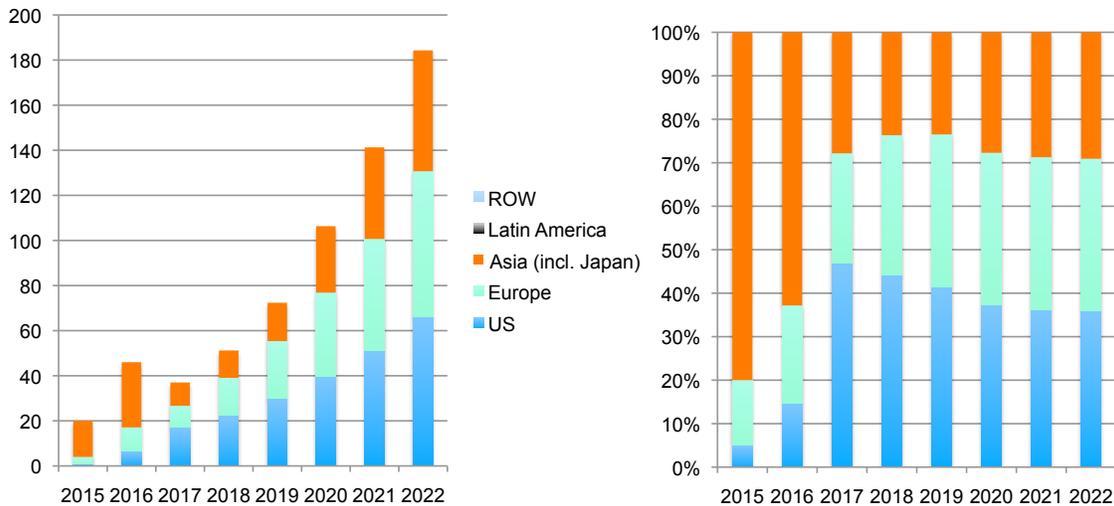


Source: IT Strategies, Inc.

**B-2 Cut Sheet Printers**

B-2 cut-sheet inkjet printers were first introduced at DRUPA 2012. Fujifilm led the way with its J-Press, which is also re-sold by Heidelberg and Xerox through their distribution channels. KonicaMinolta and its partner Komori followed in the J-Press footsteps with a UV-curable B-2 inkjet system, and several others are expected to follow by 2020.

Figure 6 Cut sheet Production B-2 Ink Jet Engines by Region WW 2015-2022



Source: IT Strategies, Inc.

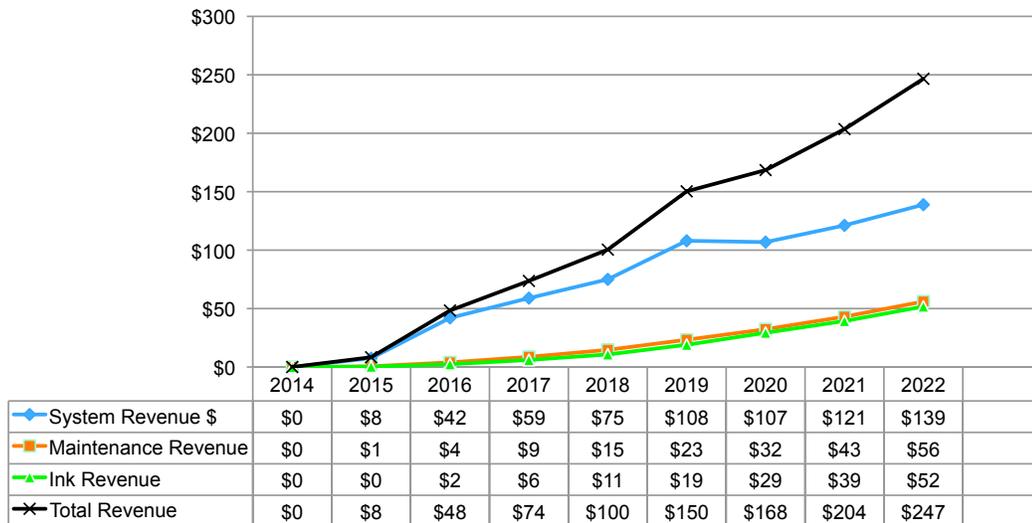
**Research on Emerging Print Markets**

Unlike the B-3 cut-sheet inkjet printers that were aimed initially at replacing toner printers, B-2 inkjet printers were designed as a direct replacement for offset, matching their substrate range, output quality on coated stocks, and productivity as close as possible. While the majority of document output ends up as a B-3 or smaller finished size, most offset output is produced at B-2 or greater sheet sizes. The main benefit of B-2 or greater size sheets from a print perspective is greater productivity.

Sales of B-2 presses have been uneven since their introduction. Internal printer manufacturer sales channel issues have mainly caused this unevenness. Sales of competitive B-2 sheet size HP/Indigos have been far greater and more consistent, in part because of a 20+ year legacy infrastructure created by Indigo. European sales channel issues in 2017 caused particular havoc to the B-2 production inkjet sales trend line. IT Strategies however expects sales of B-2 production inkjets to become more stable and predictable as hardware prices become more competitive and as other printer manufacturers enter this space with their own B-2 size printers.

Due to the slower ramp-up of B-2 inkjet printer sales than B-3 inkjet printer sales and similar average monthly throughput on a smaller installed base, revenue of B-2 inkjet printer sales lag.

**Figure 7 B-2 Cut sheet production inkjet Sales and Revenue, \$M 2014-2022**



Source: IT Strategies, Inc.

For now, for a young market, IT Strategies expects modest but steady growth of the B-2 and B-3 production inkjet printer market. Growth could be significantly stronger, but is predicated on significantly lower hardware acquisition prices not foreseeable in this period.